Prepared by Mohammad Umer

Python Tutorial

1.1 - Print

In [3]:
```
print("hello World")            # String Literal : Sequence of characters enclosed in dou
```

```
hello World
```

Q1.Print a poem Twinkle, twinkle, little star in python.

In [9]:
```
print("Twinkle, twinkle, little star,
How I wonder what you are!
Up above the world so high,                              ## SyntaxError
Like a diamond in the sky.")
```

```
  Cell In[9], line 3
    print("Twinkle, twinkle, little star,
          ^
SyntaxError: unterminated string literal (detected at line 3)
```

Below is the Correct Way:

In [10]:
```
print('''Twinkle, twinkle, little star,
How I wonder what you are!
Up above the world so high,
Like a diamond in the sky.''')
```

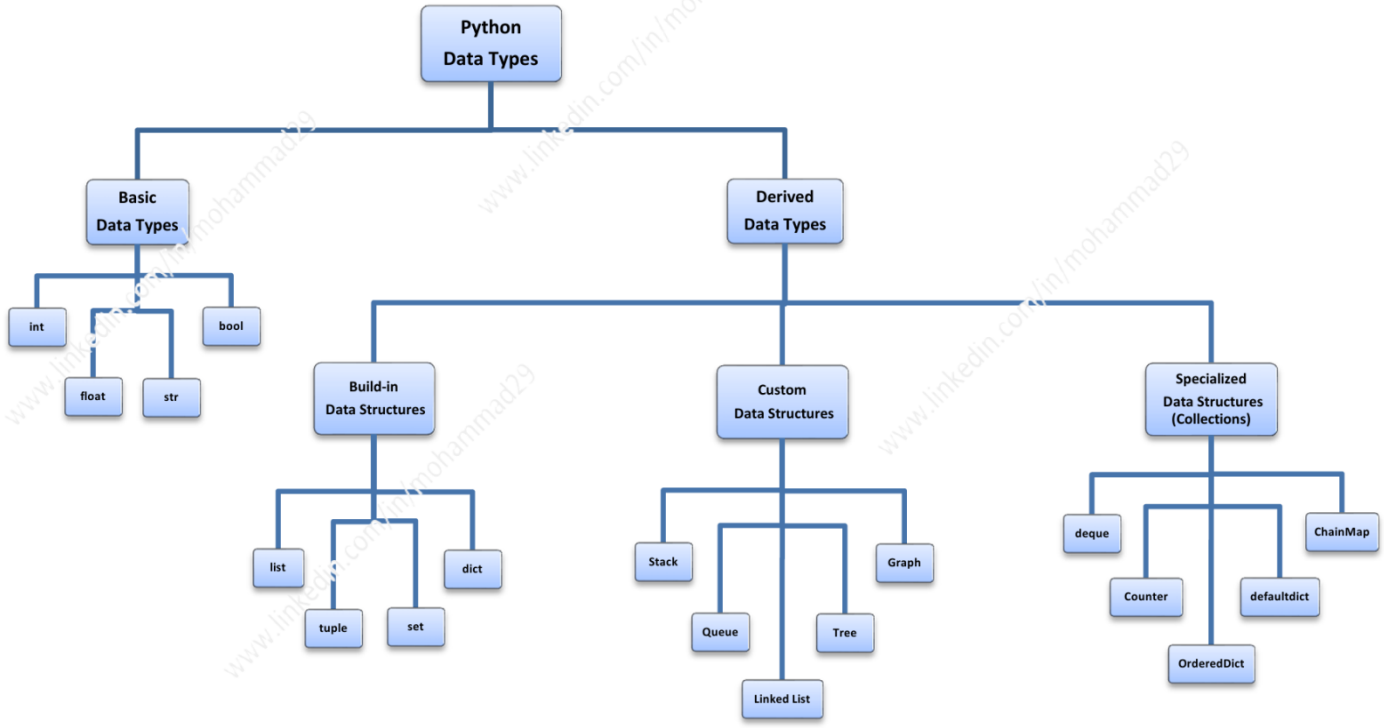
```
Twinkle, twinkle, little star,
How I wonder what you are!
Up above the world so high,
Like a diamond in the sky.
```

1.2 - DataTypes

Datatypes means what type of data that can be represented and manipulated.
OR
Datatypes means what type of data the variable is holding.

```
In [11]: print(type("Hello World"))          # type checking
```

```
<class 'str'>
```



1.3 - Basic Data Types

These are the fundamental data types in Python, which define the type of data that can be represented and manipulated. These are simple, primitive types that are directly supported by the language and do not require any additional libraries or modules.
It includes:

- `int:` Integer numbers (e.g., 5, -23, 100)
- `float:` Floating-point numbers (e.g., 3.14, -0.001)
- `str:` String (e.g., "hello", 'Python')
- `bool:` Boolean values (True, False)

-Integers

In [15]:
```
print(29)
print(type(29))
```

```
29
<class 'int'>
```

In [2]:
```
print(isinstance(29, int))
```

```
True
```

-float

In [1]:
```
print(2.5)
print(type(2.5))
```

```
2.5
<class 'float'>
```

-Strings

In [23]:
```
print("29")
print(type("29"))
```

```
29
<class 'str'>
```

1.4 - Type Conversion

In [18]:
```
# Converting float to integer

print(2.5)
print(type( int(2.5) ))
```

```
2.5
<class 'int'>
```

1.5 - Variables

Variables are fundamental elements in programming that are reversed memory locations to store data that can be referenced and manipulated in a program. In Python, `variables are created when you assign a value to them`, and they do not need explicit declaration to reserve memory space. The declaration happens automatically when you assign a value to a variable.

And the name given to these variables that helps us to differentiate one variable from the another is called `Identifiers`.

- Variable Naming Conventions

- variable name cant be a keyword.
- Variable names should be descriptive
- They must start with a letter or an '_' and contains letter,numbers and underscores.
- variables names case sensitive.

- Valid variable names

first_name = "Mohammad"
last_name = "Umer"

- Invalid variable names

2age = 30
first-name = "Mohammad"
@name = "Umer"

Example 1

In [25]:
```
x = 29
print("Identity : ",id(x))                    # id is always Unique & constant of the obj
print("Memory Location of the variable : ",hex(id(x)))
```

```
Identity :  140704678739256
Memory Location of the variable :  0x7ff85c64fd38
```

Example 2

In [ ]:
```
# STRING Variable
name = "Umer"
print(name)
print(type(name))
```

```
Umer
<class 'str'>
```

In [2]:
```
## Invalid
@name = "Umer"
print(@name)                # SyntaxError
```

```
  Cell In[2], line 2
    @name = "Umer"
     ^
SyntaxError: invalid syntax. Maybe you meant '==' or ':=' instead of '='?
```

Example 3

In [21]:
```
# FLOAT
y = 2.5
print(y)
```

```
2.5
```

In [22]:
```
# TYPE CONVERSION
y = int(2.5)
print(type(y))
```

```
<class 'int'>
```

Example 4

In [3]:
```
#bool
is_student = True
print(type(is_student))
```

```
<class 'bool'>
```

- Random Value in a Variable

In [4]:
```
import random
x = random.randint(1, 100)          # Generates a random number between 1 and 100
print(x)
```

```
38
```

- Python is `Case Sensitive`

In [1]:
```
name = "Umer"
name = "Ahmed"

print(name)
```

```
Ahmed
```

In [2]:
```
# Case Sensitive
name = "Umer"
Name = "Ahmed"

print(name)
print(Name)
```

```
Umer
Ahmed
```

1.6 - Keywords

Keywords are the `reserved words in Python` and can not be used as an variable name (identifiers).

In [10]:
```
import keyword
print(keyword.kwlist)
```

```
['False', 'None', 'True', 'and', 'as', 'assert', 'async', 'await', 'break', 'class', 'cont
inue', 'def', 'del', 'elif', 'else', 'except', 'finally', 'for', 'from', 'global', 'if',
'import', 'in', 'is', 'lambda', 'nonlocal', 'not', 'or', 'pass', 'raise', 'return', 'try',
'while', 'with', 'yield']
```

In [11]:
```
len(keyword.kwlist)
```

Out[11]: 35

Example

In [12]:
```
## Keyword cant be used as a Identifier
try = 29                                          # SyntaxError
print(try)
```

```
  Cell In[12], line 1
    try = 29
        ^
SyntaxError: expected ':'
```

NOTE :

There is a in-build function in Python, that checks if the object is an instance of the specified type or its subclass. i.e, `isinstance(object, type)`

In [5]:
```
var = 29

print(isinstance(var,int))
```

```
True
```